



IN THE
Supreme Court of the United States.

OCTOBER TERM, 1897.

No. 198.

WILLIAM WHEELER HUBBELL, APPELLANT,

vs.

THE UNITED STATES.

BRIEF OF APPELLANT.

This is an appeal from the Court of Claims of case No. 16261, brought in June, 1888, to recover \$157,598.98 on an implied contract or contract for the making or use by the United States of 105,065,990 cartridges of said Hubbell's patent, No. 212,313, dated February 18, 1879, granting or securing to him, his heirs or assigns, the exclusive right to make, use, and vend the said invention of cartridge throughout the United States and territories thereof for seventeen years (p. 27).

Appeal, p. 37 of Record.

Said making was from 31st of March, 1883, to 31st of May, 1888, by the United States (p. 23) at the Frankford arsenal (p. 22, 23).

Errors of Court of Claims.

I.

The Court erred in deciding "as conclusion of law that the petition of claimant be dismissed, in finding for the defendant, and in ordering, adjudging, and decreeing that the claimant's petition be dismissed" (p. 20).

II.

The Court erred in finding IV in its version of the patent, in its legal meaning; also in stating "The specification further sets forth that the paper disk may be dispensed with by recessing or forming a fulminate chamber in the metal of the circular plate with a central anvil bar over the recess and a perforation on each side of the bar" (p. 16).

III.

The Court also errs as to what elements constitute the invention and combination patented, and what are their several and co-operative functions and ultimate results.

IV.

The Court errs in omitting the solid flange uniting the recoil head or bottom of the case with the charge cylinder as an essential device to use the bottom and case in the combination as claimed and patented.

V.

The Court is in error in omitting to recognize as matter of law that the patent is for an organized cartridge charged with fulminate and primed and loaded as usual with a charge of powder and bullet (p. 16, p. 29, par. 1, 2, 3, 9, 11).

VI.

The Court of Claims is in error wholly as to the substance and meaning and subject-matter of the patent, as set forth in its printed opinion (C. C. Reports) filed in case 13793, in saying:

"The patent of 1879 is therefore for a combination made up of the circular base containing the fulminate, the anvil over it, with the apertures or vents placed as shown, and the position of these vents is material to the combination as described and claimed."

VII.

The Court errs in finding VI, where it reiterates the substance of error VI above in calling the case a cartridge and saying "the one (primer) used by the United States is alleged to infringe claimant's rights."

VIII.

The Court is in error throughout, in version, that "claimant's patent is for a combination of only two parts—a fulminate carrier and an anvil, which constitute a primer only"—and irrespective of their construction and adaptation to a solid flange case and bottom, and irrespective of the mechanical condition of a transverse braced, tight jointure in assembling the parts—a function set out specifically in paragraph 6 of the patent.

IX.

The Court errs in failing to notice that the specification does not say "a central anvil bar over the recess and a perforation on each side of the bar" (p. 16), and in failing to notice that the patent says: "The fulminate chamber C

may be recessed or formed in the metal of the circular plate E (par. 6) with the central bar *i* and two side perforations K K *over it* (the fulminate chamber), dispensing with the paper" (as a substance and using recessed metal), the anvil in combination constructed on the principle set forth in paragraph 7, with bar *i* of a breadth *nearly* equal to the diameter of chamber, with two side perforations or openings as claimed in the patent, *over the fulminate*; and extension of cut transversely in the anvil, as shown in the drawing filed, to make "communication" of priming powder of the charge in loading, and fire in discharge, with instant explosion, as specified, essential to certain and accurate shooting, without failures of any kind, and "into" the base of the powder charge; the whole of the "openings" being over the fulminate and the transverse extension in the anvil metal inducts the priming powder from the charge, and the fire from the fulminate, freely communicating between the base of the charge and the fulminate, and the same condition exists in the reloading cartridge as made by defendant, together with the same combination of parts and same functions of operation and same results specified in the patent.

X.

The Court errs in failing to notice that the patent (par. 6) sets out its principle of tight jointure of its parts mechanically established in assembling the three elements—the case, the carrier, and anvil—with the fulminate, and not on any gas-check expansion of parts to become tight, supposititiously by the pressure of gas in firing, and hence erroneously supposes gas-check primers may be legally considered or practically used for military service at first and afterwards finds they failed (XI, XII).

XI.

The Court truly finds as to the reloading cartridge, so called, used by the defendant (finding XII):

"Owing to the juxtaposition, construction, arrangement, and combination of its parts, this cartridge was best adapted to receive, *with certainty of fire*, the blows of the striker in the Springfield gun."

The Court fails to state the parts constituting the patented combination and the functions developed, by which the ultimate result of "certainty of fire" is attained. It fails to state or notice its tight-jointure principle, to insure perfect condition of fulminate and powder charge and prevent reaction of fire both backward and forward in firing.

XII.

On Hubbell's Originality.

The Court errs in its version of the specification filed April 13, 1865, in its opinion and finding II (pp. 13, 14) and the legal interpretation thereof.

The Court filed no separate opinion in case 16261, but filed an opinion in case 13793, with findings of fact still pending open for amendments; appeal entered of record in abeyance, and reiterated the facts and filed amendments in case 16261, which reverse and annul or contradict or correct those filed in 13793. The opinion reported officially errs in law in asserting that the application and invention of 1865 was for a concentration of fire and no bar with two side vents other than a suggestion.

The legal meaning and facts being that the "central fire" mentioned being as distinguished from "rim fire" (p. 14); and "one or more vents" specified (p. 14) *with metal left solid immediately opposite the center* (or bar *i*), for a gun with long

breech block and axial motion of striker, loading in the top of the barrel or recess. (See claim, p. 14.) Hubbell had both guns, and the cartridges adapted for both. Application refiled more complete and improved January 23, 1872; renewed on a division April 25, 1872; special allowance of examination by the Commissioner of Patents 1874; renewal application of perfected invention, December 28, 1878; patent, February 18, 1879 (p. 29). The long breech gun was adopted by act of Congress in June, 1872, and used to experiment with gas check and hollow flange cartridges (Ord. Mem. 14), all failures.

The only known law of gases, explosive and all others, is "diffusion," and not concentration, and hence "diffuse" is correctly expressed in the patent and erroneously by the court (Brande's Encyclopedia, Booth's Chemistry), "a small amount of fulminate with large vantage" (p. 14, Appeal); also "annular striking (anvil) face;" also "central anvil face, of anvil plate," including both one central or two side vents (1865)—so proved by every witness in the case, and finally found by the Court (XIII), Models "Exhibit 1858 to application of April 13, 1865, claimant's," containing the bar *i* and two side vents, with Maynard fulminate primer, and also plate of *annular* anvil with large central vent, the jointure being made with a hollow flange case clasping the anvil rim *longitudinally* and solidly, not the combination with cylinder jointure, patented in its entirety with solid flange case.

The Court erred in failing to grasp the claimant Hubbell's course of progressing invention. "Models" (p. 22) "Cartridge in box, ordnance office No. 2598, filed May 31, 1872, by claimant," filed when patent application was pending with the executive branch of the Government.

XIII.

The Court, admitting Hubbell's originality as early as 1842, February 8, erroneously fails to notice that the Hubbell cartridge and model proved and found (Exhibit A. R., L. M) of February 8, 1842, has both the cup-anvil rim bottom and the pocket or recess in the bottom and flat base for flat-breech gun, with central chamber of fluminate, flat in front for an anvil face in the center of the base of the powder chamber, all similar to the defendant's reloading cartridge, with rim to fasten it like the cup-anvil cartridge (Q. 3, R. 105): "Question 3. Will you look at the specification and drawing of the gun and cartridge now shown you, under oath of Mr. Hubbell, February 8, 1842, marked No. 3, filed June 26, 1883, J. R., and produce a model of the cartridge there described and shown? Answer. Here produce the model. (Model offered in evidence and marked Exhibit A. R., L. M., com'r, Case No. 13793.)

This cartridge had a compressible paper case, to tighten up, forced into the gun chamber by a plunger. It was a machine rapid-fire gun.

The tight-jointure principle of the present metallic case cartridge is by a metallic combination of case and plate or transverse anvil clasping a circular cylinder of paper or of recessed metal for a fulminate carrier.

Hubbell was the first in the world to conceive this germ or idea of tight-jointure central-inclosed fulminate invention with flat breech-loading gun and central pointed striker to use it. The striker of 1842 plunged forward quick with both a forward and rotary motion. In 1865 he used a spring plunging motion of striker. Now used, 1878 to 1897. (F. XIII, Exhibits "April 13, 1865," filed.)

XIV.

The court erred in calling the "fulminate" the priming. It is not the legal version of the patent.

In the nomenclature of the patent, ordinary words well known then (1842 to 1878) have been used.

The "fulminate of mercury" has been called "fulminate" throughout and not called, "priming." It, the fulminate, originates fire. "Priming" conducts the fire only as a fuse does, but quicker, and was the gunpowder which entered the vent in loading or afterwards applied in the vent, and does not originate but cumulatively leads the fire into the charge of gunpowder. The priming also filling the vent prevents it from filling up by oxidation of its metal sides, and fulminate is too powerful for priming.

In loading a cartridge, the fulminate is first applied to the case when empty to prevent accident and be safe. The case is then primed by the descent of the finest of the gunpowder into the vents in loading the charge downward. The charge is filled downward into the case and the bullet set in front. This completes the assembling of all parts. The priming and charge of gunpowder and bullet are old. The patent invention is in the construction and combination of the firing devices with the fulminate and in the center of the bottom of a solid flange case to hold them before and in use and extract them with safety and certainty in all respects after firing, so as to reload and not disable the gun.

XV.

The Court also erred in assuming that the claimant's vents or "openings" were only partly over or beyond the fulminate and the defendant's wholly over the fulminate, and that this as matter of law was a material variation. The "openings" stated in the patent claim of claimant is the actual openings shown on the original drawing filed in the application in the Patent Office (XIII, tracing drawing, filed

December 26, 1878, with application of claimant) showing elliptical-shaped openings at the sides of the bar *i* over the fulminate. The outer curve of the ellipse is formed by the side of the fulminate chamber; hence "nearly coincide" or agree with them. The defendant's openings over the fulminate are exactly the same in shape, location, and make-up. In both is an extension cut or transverse groove radially in the metal of the anvil, connecting with the openings and with the bottom or base of the powder charge, which establish or maintain "communication" between them to freely induct the priming powder to the "openings" or vents, and freely induct the fire from the fulminate chamber "into" the base of the powder charge.

One is cut from the openings outward radially; the other is cut from the openings inward radially; both perform the same office of free "communication" required by the patent to get the best results of the combination of elements or mechanical parts. The patent is not confined to any particular shape of "communication" in front of the anvil. The better form is to bore out layer, the bottom of the recess of the case, and not cut across and weaken the anvil metal to suit a small hole which would otherwise cut off the communication required by the patent, and defeat the action of the cartridge. The anvil is then stronger, and the contraction of the case in front firm and strong. Both forms are embraced by the patent; their functions are identical. The area of the openings over the fulminate and the bar *i* in the original drawing and defendant's make of reloading cartridge with the patent combination are the same. The Court erred as to the patent.

Chi. & N. W. Co. vs. Taylor, U. S. R., 554.

Winans vs. Denmead, 15 How., 330.

Root vs. Ball, 4 McLean, 177.

Alden vs. Dewey, 1 Story, 366.

Parker vs. Haworth, 4 McLean, 370.

Howe vs. Abbott, 2 Story, 190.

Sewell vs. Jones, 91 U. S., 171.

The Hubbell Patent 212,313

and its use and appropriation by the exclusive making of defendant for its military service, including the State militia.

This 212,313, Hubbell, is a patent for an original organized cartridge, with fulminate primer made separate, and solid flange metal case, in the bottom (flat base) of which the combination of the fulminate devices is contained, in combination establishing the principle or function of a cylindrical mechanical transverse braced tight jointure, with a cylindrical recess of the case, whereby in the cartridge tight inclosure is established, with firm inclosure and resistance for the fulminate, and free escape in action, are established in the manufacture or assembling of the case, carrier, and anvil, on metallurgical and mechanical principles of force and resistance, and all humidity, rain, dews, wet, or condensation of vapor are excluded from the fulminate and charge; all chemical action of oxygen and hydrogen excluded; all galvanic action and destructive chemical effect prevented, and an assured, certain, instant ignition and explosion of the cartridge attained; no misfires, no hang-fires, no decomposition resulting; no buckling of carrier, no leakage of fire, no reaction of the fire, no waste of power resulting, but a safe, certain, high-power, instantaneous-acting military cartridge is created as an ultimate result, all complete, with bullet in place, fitted as usual, tight and lubricated in the front end of the case. (See course of invention from 1842, pp. 13, 14, 15, 16, to issue of patent, Feb. 18, 1879.)

The invention in this patent is, as stated by the claim, in concrete form: In the combination of the circular anvil plate, with its two vents or "openings" over the fulminate contained in a circular chamber or carrier made of compressible or tight-fitting substance, paper or thin metal, and with indenting metal center opposite the "anvil bar *i*" of the

anvil plate, holding the carrier to the walls of the case, in the bottom of a solid flange case, the "bar *i*," so called, resulting from the two openings over the fulminate also siding on their distant curve or ellipse, with the side of the fulminate chamber; and which flange of the case holds firm in place in the breech chamber of the gun in firing, and draws out for reloading the gun and case, without bursting and without stripping, all co-operating together, substantially as described, forming a tight-jointure combination of the three main elements—the solid flange case with recoil head or bottom; the circular fulminate carrier; the circular plate faced anvil, with its central bar *i*, inclosing face-resisting face, and two free-acting side "openings" or ventage over the fulminate in its central chamber in the recoil base or bottom of the case; and a channel cut or formed laterally in the anvil metal plate, to induct freely the priming powder of the charge to the openings respectively, and induct the fire freely from the fulminate *into* the base of the powder charge. The patent says (p. 29, par. 9): "This chamber at its sides or outer extreme edges communicates directly and exclusively with the powder charge;" p. 32, figure 2 of drawing, shows the two actual openings and the transverse cut over the carrier in the anvil plate metal.

The Court below failed entirely to comprehend or state the scope, elements, functions, combination and character or principles of the patent 212,313, and equally failed to see and comprehend or state that the defendant's gill cartridge, or anvil, as he calls it, contains all the elements of the patent 212,313 of claimant, co-operating together, and as expressed and comprised by the claim, and constituting the patented invention of the claimant.

The Gill patent (p. 34) says: "My primer *x* permits the flame to pass in a *short* and *direct* course to the powder," being the same function above stated from the Hubbell patent, and then Gill claims only the cross-cut in the front

of the anvil and not the combination of either the primer or of the cartridge when organized.

The Court also fails to notice that the Gill patent disclaims the substance of the Hubbell patent when it says that he (Gill) "merely" invented the cut across the front of the circular anvil between the openings through it. "Merely," there used, is a word of disclaimer required by the Patent Office in view of the Hubbell prior patent for the combination of the elements of the cartridge, which is best organized with a large central hole or space between the contraction edges, and no cross-cut in the front face of the anvil (see model), as specified, suited to either case.

The cut across is a mere formal shape or extent of cut or space in front of the anvil inner face or body, shown in the Hubbell patent drawing transverse from the actual openings (Fig. 2, p. 32), to maintain the "communication" stated in the Hubbell patent, admit the priming or fine powder of the charge down to the fulminate, and the fire freely forward "into the base of the powder charge" (p. 29, par. 9).

The better form is to bore the opening of the contracted part of the case larger in front of the anvil plate (like the patent) and not cut the thick anvil plate clear across its front.

Any shape of "communication" from the openings or vents suffices to prime and free the fire, provided the inner or inclosing face, bar *i*, circular or cylinder form, with its side openings over the fulminate, and tight-jointure principles, are maintained in the bottom of a solid flange case, as specified, and embodying the maximum of ventage and inclosure and resistance with the least amount of fulminate (one-third to one-half a grain) and greatest certainty of fire, and greatest trajectory power with instant effective action.

The exclusive adoption of the Hubbell combination and principle by the army service for the whole term of the patent proves its superiority.

All gas check and reinforce and hollow flange devices,

and all experiments, were abandoned by the United States on its adoption.

The law of the case or patent is that the patent is not for a combination only of two elements forming a primer, nor for an anvil with a chamber of fulminate in a protrusion of the case.

The patent is for a cartridge organized complete for use in a flat-based breech-loading gun, and comprises, in the functions developed by the combination, the three main firing elements of the cartridge, to wit:

1. The case, with head united to it by a solid flange, for use in a flat breech base gun, to insert, hold, and extract the empty case and deliver the recoil stress on the flat breech base of the gun in firing with certainty and safety.

2. The circular compressible carrier of fulminate, to fit around tight in the bottom of the case to secure certainty of fire and instant action.

3. The circular plate face anvil with its two side openings and central bar *i* over the fulminate, inclosing it securely, resisting it in indentation of striker, holding the carrier in tight jointure with the case around it before action, excluding moisture and chemical change, voltaic effect, and therefore tight and instant in action, mechanically and operatively, and yet venting the fire of the fulminate freely forward into the priming and base of the powder charge within the case, enabling it to burn forward from this base as it impels the bullet out of the gun without reaction of fire and without waste of power. (See patent, p. 29, with the functions and ultimate results expressed, as required by law of 1836 and rules of Patent Office, without prolixity or matter not novel or descriptive.)

Thus these three elements or parts of the combination using the fulminate and powder charge bring into harmonious operation all the mechanical and chemical properties

of the organized cartridge, comprising the case, carrier, anvil, fulminate, powder, bullet, making it a certain, safe, and supremely quick, accurate, and powerful military cartridge, in accord with the declarations of the patent; and the making of this combination of elements is the use of the patent by defendant in its "reloading" cartridge; and this in law, whether it adds any supposed improvement in the form of openings or cut in the anvil metal to maintain the "communication" between the fulminate and powder in front of the anvil, set forth in the patent, for "instant explosion."

Root vs. Ball, 4 McLean, 177.

Alden vs. Dewey, 1 Story, 366.

Parker vs. Haworth, 4 McLean, 370.

Howe vs. Abbott, 2 Story, 190.

Sewell vs. Jones, 91 U. S., 171.

Clough vs. Gilbert & Barker, Mann & Co., 106 U. S., 166.

Cantrell vs. Walleck, 117 U. S., 689.

Rowell vs. Lindsay, 113 U. S., 97.

Union Paper Bag Co. vs. Murphy, 97 U. S., 120.

Goodyear Co. vs. Davis, 102 U. S., 122.

The Gill patent (pp. 33, 34), on which the defendant relies, is "merely" for a groove between the two openings of the anvil, across its front face, to communicate with the base of the powder charge and admit the priming to the openings and the fire freely outward, "by a short and direct course, to the powder" (p. 34). Hubbell's patent says: "The two side vents diffuse the fire into the base of the charge of powder" (p. 29, par. 8 and par. 9). "This chamber, at its sides or outer extreme edges, communicates directly and exclusively with the powder charge."

Both do identically the same; both are identical in substantive structure, purpose, and effect.

Hubbell claims the necessary combination of circular anvil, carrier, and case. Gill's contains, but does not claim, the combination. It is a later subordinate patent and is for a frivolous form of variance in the shape only of a transverse cut in the front of the anvil face, from the openings or vents, comprehended by the Hubbell patent and a direct use of the Hubbell patent. It is one of those colorable forms which any ordinary mechanic could make after the issue and reading of the Hubbell patent; and its perusal at the Frankford arsenal by Major Whittemore in command, who introduced it with Gill as the master mechanic into the service, did not entitle Gill to patent the cross-groove as a modified shape of the "communication" of the Hubbell patent. Such variations of "mere" form are not patentable. (U. S. Supreme Court, *Winans vs. Denmead*, 15 How., 330, and many later cases—U. S. S. C. Rep.)

The Law of the Contract.

The United States Constitution says: "The executive power shall be vested in a President of the United States of America." In accord with this and the law under this, his Secretary of the Interior receives the fee, petition, specification, and drawings forming the application for a patent from the inventor; examines, adjudicates, and grants the patent describing the invention.

The President's Secretary of War has the invention made and used by the United States Army, of which he is also commander-in-chief. Therefore, in law, the executive power knows in these relations what he or it is doing, and is in privity with the inventor in an official capacity; and the invention becoming "private property" by the issue of the patent, the taking of which is forbidden by the Constitution without just compensation, by virtue of the supreme law the facts, unless objected to by the patentee, of taking and

use or adoption and making amount to an implied contract to pay such just compensation, and the law vests jurisdiction in the Court of Claims as an implied contract.

Besides, in this case at bar the inventor and patentee furnished the specification as patented to the Secretary of War with license letter for \$2.50 per thousand on March 22, 1879, after which, on full competitive trial from July, 1879 to 1883, about 13,000,000, and as many cup anvils on trial, the War Department adopted the invention, calling it the "reloading cartridge."

The implied contract is fully established with privity and consent of the patentee, Hubbell. (*James vs. Campbell*, pp. 356, 357, *Otto*, XIV, vol. 104.)

Contract.

The reloading cartridge made by the defendant is officially declared and found by the Court (finding XII, p. 22):

"The manufacture of the reloading cartridge commenced at the Frankford arsenal in the month of July, 1879." "The solid flange case, with a pocket or recess to reload, was known at the date of plaintiff's patent 212,313."

The Gill patent was applied for July 29, 1879; issued October 14, 1879 (p. 34).

The Hubbell patent was last applied for December 28, 1878; issued February 18, 1879; submitted with license, \$2.50 per M, to War Department by Hubbell, March 22, 1879, with letter (p. 19, finding VII; *Rec.*, pp. 74, 75, 76), and referred to Frankford arsenal, Major Whittemore in command, who reported it a practical cartridge, and who commenced there the manufacture of the entire metal form, with the recessed circular plate or "cup," circular carrier of fulminate, circular plate anvil with two openings and bar, and solid flange case, in the month of July, 1879, with Gill as the master mechanic under his command. After a competitive

field-service trial by the army of the cup anvil (or gas-check reinforce) and reloading cartridge, the cup anvil was abandoned and the reloading three-element cartridge, as patented by Hubbell February 18, 1879, exclusively adopted.

The Manner of Use of the Invention.

The case may be used three times.

The firing of a cartridge destroys the combination patented, but the case is capable of being twice used by a new combination of anvil and carrier with fulminate, charge, and bullet, saving some expense in the case.

The Court of Claims has fixed the royalty value at \$1.50 per thousand. The royalty rate of \$1.50 per thousand on the 105,065,990 cartridges amounts to \$157,598.98, and for this amount the claimant has petitioned, and asks judgment of the Supreme Court of the United States in his favor in the said sum of \$157,598.98.

WM. WHEELER HUBBELL,

Appellant, Claimant, and Attorney and Counsellor.

U. S. S. Ct., *May* 20, 1850.

GEO. S. BOUTWELL,

Attorney of Record.

F. P. DEWEES, *Of Counsel.*

IN THE
Supreme Court of the United States.

OCTOBER TERM, 1897.

No. 198.

WILLIAM WHEELER HUBBELL

vs.

THE UNITED STATES.

ADDITIONAL BRIEF OF APPELLANT.

The following errors of the court and exposition of the course of progress and essence of the invention, as finally perfected, specified, and patented and used by the United States, are deemed important:

XVI.

The Court of Claims is in error in finding VI, p. 6, in its alleged description and understanding of the "reloading cartridge" of the Government's manufacture in these words, as well as in the legal nature of appellant's claim of user of his patent 212,313, and of the legal nature of his patent, to wit:

"VI. The 'reloading' cartridge is another of those alleged to be covered by claimant's patent. This cartridge is a hollow,

metallic shell, rimmed around the base, with a pocket in the exterior of the center of the base. Through the center of the top of this pocket, supposing the cartridge to be stood upon its base or closed end, is pierced a single aperture or hole to carry the fulminate flame to the black-powder chamber. This cartridge contains only the black powder and the bullet. Any one of several different kinds of primers may be used in it. The one used by the United States and alleged to infringe claimant's rights is a circular metallic cup, into which is put the fulminate. Above this is fastened a disk or cover having a groove on its upper side, being the diameter of a circle. At each end of this groove a small piece or notch is cut out of it. Through these holes thus formed the flame from the fulminate escapes. If this primer is placed in the chamber of the reloading cartridge, with the closed end of the cup outward and the grooved end against the top of the chamber, the flame from the fulminate, when exploded, would pass through these holes or notches, thence along the groove to the central aperture in the cartridge case or shell, thence to the black-powder chamber through this single aperture. The entire area of each of the holes or notches in the disk is over the fulminate chamber, and the portion of the disk between the holes is the anvil."

XVII.

The court also erred in finding VI, in saying in suit 16261: "*The 'cup-anvil' cartridge is one of those alleged to be covered by claimant's patent.*"

A waiver for want of the combination patented, as it was reported by the War Department, was filed by claimant and his petition amendment allowed by the Chief Justice, confining the suit to the numbers of the reloading cartridge as reported by the War Department. The court corrected this by amendment, p. 23: "*The cup-anvil cartridge is not claimed in this action as covered by plaintiff's patent;*" and XII, "*when (1879) it was abandoned and the present reloading cartridge adopted in its stead.*" (See assignment XI, p. 5 of brief, as to reloading cartridge.)

XVIII.

The court's errors consist in describing and considering that the case or shell with powder and bullet only constitute the cartridge in this suit (error V). Such components as a cartridge are applicable only to the Maynard, the Burnside, the old French Bourcier, and others not carrying fulminate inclosed within the case (in the exhibits), requiring the gun itself or a nipple to carry separately the firing devices. This suit, 16261, is for a fulminate-charged cartridge case organized, carrying fulminate inclosed, powder, and bullet, all to load into the gun at one operation of insertion, with combined inclosed firing and tight-jointure devices—the solution of a complex problem in fire-arms and ammunition.

XIX.

The court also erred in saying the primer (so called) is placed in the "*chamber*" of the case, the powder chamber being the only one specified, the rear recess being termed "a pocket," and the primer could not be fired in the "*chamber*," as specified in the Springfield gun.

XX.

Also in failing to notice that the "fastening" (so called) of the anvil is really the tight-jointure combination with the cylindrical interior surface of the case itself, in its rear recess, pocket, or bottom, set out in the patent as a vital function of paragraph 6 of the specification.

XXI.

Also the court erred in its statement that the shell or case is "rimmed around the base," withholding the fact that it is not a hollow rim or flange and gas-check device to rein-

force, but is a "solid" flange—one of the vital conditions of the claim—to prevent spreading and leakage, stripping, and bursting of the case, and to admit of a safe use of the other elements of the combination as patented and used by the United States since its issue.

XXII.

The court manifestly failed to grasp the legal nature of the specification of invention patented by appellant and used and involved in this suit (16261), and errs as to its being only for "the one primer," not itself an organized cartridge with a mechanical tight-jointure principle, and also errs in the statement that any one (primer) will answer for use, when the Government has tried in field service, condemned, and abandoned the cup anvil and all others, in both single and double recessed cases, and exclusively adopted claimant's patented plate-anvil combination, functions, principles, and invention, as it subsequently substantially finds in the XI and XII amendments and as further amended (p. 23), with official exhibits of Government reloading cartridges and drawings, all official, from the War Department, with legend of structure and official specification of assembling the parts to make up the cartridge. (Finding XIII.)

XXIII.

The court also errs in failing to notice that the "flame" of fulminate is not simply a train vent flame or fire to ignite slowly from grain to grain of powder, as a fuse does, nor from place to place, thence to another place, as its language imports, but its flame or fire is accompanied by a "superior explosive force" (par. 9 of patent), far excelling gunpowder, and that this force carries the flame or fire in a "short and direct course" or "communicates directly," in-

stantly, to the place of least resistance, which, being inclosed with the powder charge, must be the rear part or contracted base of that charge, directly in front of the anvil body, into which its two vents discharge the force and flame or fire unitedly, and in the Government "reloading cartridge" as well as in the Hubbell patent. The contracted metal of the case in front of the anvil plate to hold it firm exists in both, and into this contracted space or base of the powder charge the two anvil vents unitedly discharge their force and flame or fire out of and from the fulminate chamber.

XXIV.

The court also errs in point of law in its conclusion, it seems, that uniting the two streams of flame from the anvil into a "single stream" in front of the anvil into the enlarged part of the powder chamber, or having the anvil two openings "wholly" over the fulminate in claimant's combination of mechanical parts, functions, and principles, escapes the use of his invention patented by letters patent No. 212,313 in a combination used. The objects of the two openings are to leave the metal bar *i* of the anvil in the center, to firmly secure and certainly explode the fulminate against it, and to let its force and fire escape freely and instantly out of the chamber through the two actual side "openings" show in the drawing, Fig. 2 of original, of full size, and area as large as in the Government cartridge and same size of chamber, 18 inches in diameter inside (pars. 7 and 8 of patent, p. 29), and in the claim. The two streams of the anvil come together into one in the contracted open base of the powder chamber or charge *in front of the anvil* in both cases of the Hubbell patent and in the Government reloading cartridge, exploding the charge of powder instantly in a forward direction against the bullet as its line of least resistance, driving it out of the muzzle of the gun; and it also is immaterial whether the color of the powder is "black,"

brown, yellow, or white. All colors exist. The patent specifies "the powder charge," which embraces the *loading charge*, with its usual fine grains to enter and prime its ducts or vents leading to its main body, as common in all muzzle-loading guns for infantry service. The patent specifies the "powder charge" throughout, not a particular shape of "powder chamber." Paragraph 9 says:

"The distinguishing feature of my invention is the organized construction to carry into complete effect the expressed principles of operation of the fulminate of mercury or *detonating powder* and the *powder charge*."

Par. 8. "F is the space in the cartridge, which is loaded, as usual, with a '*charge of powder*,' and bullet of any desired weight and shape."

The object of the patent is to develop supreme military power in all the exigencies of exposure and service, and in actual war, if needful, by utilizing the full capabilities of "detonating powder" and the "powder charge" on the principles specified in the patent.

The court below errs entirely as to the legal meaning, scope, and functions and language of the patent.

XXV.

The court also errs in the finding VI in saying, "*and the portion of the disk between the holes is the anvil.*"

The legal meaning of the word "anvil" in this suit, 16261, the patent 212,313, and the War Department's legend of reloading cartridge is that the "anvil" is the circular cover to the fulminate, with its two vents and central bar between the holes, and its circular edge to bear the circular carrier of the fulminate in tight jointure with the inside recess surface of the case, whereby the anvil safely secures the fulminate from impairment, firmly incloses it, and firmly resists the compressing force of the striker, tending

to displace all the fulminate particles, but with greatest intensity on the bar (i) or central part, and there first igniting it.

The anvil plate, in its peculiar construction and combination with the carrier and case, compels the development of all the functions: of tight jointure in assembling and in using the parts; of firm inclosure of the fulminate for use; of firm resistance to the fulminate as it is being compressed by the indentation of the metal base of the fulminate chamber; of thereby causing its instant explosion, the anvil acting always as a transverse, resistant, strong brace, holding its fulminate-carrier in solid, tight, mechanical jointure with the wall of the case—a function vital and set out separately and specifically in paragraph 6 of the patent combination; and, finally, the anvil allowing a free escapement of the explosive force and fire or flame by two side escapes or openings out of the fulminate chamber into the base or contracted rear part of the powder charge, the metal of the anvil between the openings being the “anvil bar” only, the central part of the anvil itself, which is a circular plate or disc anvil, constructed and combined so as to perform all these vital functions of the cartridge by the combination in the Government “reloading cartridge.”

The court evidently failed to comprehend the functional principles of the reloading cartridge as shown by the exhibits of cartridges and official drawings produced with a legend descriptive, and also failed to comprehend the legal meaning and principles of the patent 212,313 for the invention of this appellant.

The “anvil” is fully shown by the War Department in its return, official drawings, page 35 of Transcript, three figures, under the heading “anvil,” and its circular fulminate-carrier under the heading “cup,” three figures (size of scale, 2 to 1), with legend.

THE ESSENCE OF INVENTION OF THE HUBBELL PATENT
212,313.

There are four great vital principles embodied and co-operating in the patent, by virtue of its construction and combination of mechanical parts constituting an organized system of cartridge. They are :

First. A solid, tight jointure of the three metal parts braced and held mechanically tight by force and reaction in assembling the parts and tight during field service and in firing. (Par. 6 of patent.)

Second. The firm inclosure of the fulminate in a central chamber in the circuit of the bottom or head of the metallic case by means of the circular carrier and plate anvil or disk, with its central bar solid (not a suspension in space of fulminate to crumble loosely, as gas-check devices have to expand a cup or case). (Pars. 5, 6, 8, 9 of patent.)

Third. The firm resistance generally of the disk or plate over the fulminate particles by the circular, plate-face anvil and the absolute maximum resistance of the fulminate at the exact mechanical center by the bar *i* of the anvil to the striker's compression of the central base of metal of the fulminate chamber, to ignite the fulminate at this center with "certainty of fire there originated." (Pars. 7 and 8 of patent, explained in 9.)

Fourth. The free-escapement principle of the fulminate force and fire through the openings at the sides or edges through the anvil plate and over the fulminate, proportioned as shown in the drawings, substantially allowing the free, instant escapement of the gas power and fire out of the fulminate chamber into the contracted base of the powder charge in front of the anvil, so that it shall explode forward towards and against the bullet. (Pars. 7, 8, and 9 of patent.)

The premises of the invention or combination of parts are first set out in paragraph 2 with reference to 9th, as to "the solid flange and head in one piece." The subject of the patent is set out in paragraphs 1, 11, and 9 in these words:

Par. 1. "I, William Wheeler Hubbell, have invented an improved metallic cartridge."

Par. 11. "My invention relates to the peculiar construction and combination of a circular metallic perforated plate with the circular fulminate carrier and solid fire-tight metallic case and head in one piece, as will be hereinafter more fully set forth and described."

Par. 9. "The flange and head of the metallic case are solid, all in one piece."

It is the solid flange that unites the head and case, as claimed in the combination, and is vital to its successful use.

THE TIGHT-JOINTURE PRINCIPLE.

Pars. 5 and 6 say: "D is a circular disk of paper or any suitable substance, perforated through the center for the reception of the fulminate in this perforation or chamber C."

"This paper disk, when charged with fulminate, is placed against the bottom L of the metallic case A. E is a circular metallic plate closely fitting inside of the case A, down upon the paper disk D, where it is held in place by contracting or pinching in the case A, which forces the plate E down upon the disk or base of the case and *makes a tight joint around the edge of the plate.*"

(This involves the three elements of the combination claimed with the fulminate.)

The anvil when made of the "metallic plate E" above mentioned. Paragraph 7 says:

"The plate E is provided with perforations *k k* upon either side of a central line drawn through its axis, as shown at *h h*, Figs. 2 and 3, sufficient space being left between these

perforations to form the bar *i*, of a breadth nearly equal to the diameter of the perforation C, immediately over which it rests."

(This gives a circular anvil with metal central solid bar *i* and two side openings over the fulminate and tight fitting inside of the case, really a long recessed cup.)

How to make a *metal fulminate chamber* (or cup) with its anvil bar *i* and two side openings "closely fitting" also inside of its case or cup (par. 8):

"F is the space in the cartridge, which is loaded as usual with a charge of powder and bullet of any desired weight and shape." "The fulminate chamber C may be recessed or formed in the metal of the circular plate E, with the central bar *i* and two side perforations *k k* over it, dispensing with the paper" (substance). "The central anvil affords a *firm resistance* to a central striker acting on the center of the base L and compressing the fulminate to *ignite it with certainty*." "The two side vents diffuse the fire into the *base* of the charge of powder, and its *instant explosion* presses back the circular anvil plate, and prevents it from being blown out in the barrel, the charge being consumed from the base forward without reaction of the fire or waste of the powder."

This change from paper to metal for a carrier or cup enables the process of manufacture to be changed from punching out the chamber to recessing the chamber (pushing it through a die, as long well known), using the metal of the proper diameter—.40 of an inch for a Springfield rifle .45-caliber cartridge, which results in a cup .20 of an inch in diameter outside, .18 inside, and .10 of an inch deep, with anvil plate also closely fitting inside of the case or cup, as previously specified in paragraph 6 in the same combination, to make a tight jointure there, and also in paragraph 2 set out as of Hubbel's specified invention, the only difference in these two modifications of the patent being in the smaller outside diameter of the metal case or cup or fulminate-car-

rier, the inside, .18, being the same in both, and its "retaining disk" or plate anvil "over the fulminate," which it *firmly* incloses, the rear recess in the shell or case being correspondingly smaller in the bottom, as well known, and found for such recess in 1878-'79 and since 1842, but for other and different firing devices, of no comparative practical utility as a military cartridge, and not containing the construction, *mechanical* combination, and *tight-jointure* principle specifically set out in paragraph 6 of Hubbell's patent, nor the *firm* inclosure and *firm resistance, with certainty of fire*, and free *escapement* of the fulminate explosive power from its chamber; all of which, organized together, are the essential vital principles of this patent cartridge, as specified, and making it an "improved metallic cartridge" superior to all others, and hence exclusively adopted by the United States after the patent issued, with full knowledge thereof and consent of the patentee, for a just compensation stated.

"THE DISTINGUISHING FEATURES."

Paragraph 9 uses language specific, and also relative, to distinguish from Patent Office references and older patents. The words "contracted into a diminished or small central chamber and fills it" distinguish from the five-grain fulminate rim-fire cartridges and from Moffat's rim-primed and center-primed combustible wad hollow-flange cartridge patent. The words "so that the 'explosive force' of the fulminate is not allowed to expand under a larger area of the anvil plate and blow it out, but is compelled to diffuse its *explosive force*, not in a central stream, but in a diffused body into the base of the powder charge," are to distinguish it from both the Howe patent and Smith & Wesson's (Exhibit American Bartlett and Gallatin), both of which have an air space *under the whole area* of an anvil "diaphragm" or plate, with only a central small vent excluding all powder; both a central stream through the plate or diaphragm; one

(Howe's) a funnel-shaped central air-space vent, an accelerator; neither capable of any central fulminate chamber nor central bar nor two side vents, intended only for pistols; no solid flange, and impractical, of no use whatever, but must blow the anvils out of the muzzles of the pistols. The rules of practice and law of 1836 require this distinguishing language.

The patent combination of principles and devices of Hubbell (this) "assures a *certain ignition*, security of the anvil plate to keep its position, and a complete combustion of the powder charge from the base forward as it impels the bullet out of the gun." Then the claim:

"In the bottom of a solid metallic-flange cartridge case or shell, the combination of a circular base inclosing a central chamber of fulminate and an anvil over the fulminate provided with two or more openings, whose inner edges nearly coincide with the edges of the central chamber of fulminate in the base of the cartridge, substantially as described."

Turning to the specification, we find from paragraph 2 and 6 that this claim embraces the combination of the circular anvil plate with its bar *i* and two side openings over the fulminate, with the circular fulminate-carrier or base tight-fitting, and with the solid flange case braced by the anvil transversely in tight jointure with and against the inside circuit recess surface of the case, in which they are secured in the bottom within reach of a striker to compress the metal center of the fulminate chamber, and its language embraces both the paper-carrier and metal-carrier or cup in the combination.

IDENTITY.

The reloading cartridge of the Government is identically the metallic modification or form of the Hubbell patent construction and combination and principles of tight mechanical jointure braced by the circular anvil holding its

circular fulminate-carrier tight and solid to the case, with a central chamber of fulminate, bar *i*, and two side openings over the fulminate to ignite and conduct its fire to the powder charge in front of the anvil and instantly explode it forward against the bullet. It has every element, function, and principle of the construction and combination patented to Hubbell. Its vital parts, the fulminate chamber, bar *i*, and ventage, are the same in size as the original of the patent, proving it was adopted from the patent.

Hubbell from February 8, 1842, progressively originated, first, the central chamber of fulminate inclosed, the central pointed striker; next, the separate anvil plate, with central bar and two vents, solid flange with indentable center and free escapement, and then the circular, tight-jointure principle instead of a gas check jointure, and finally perfected the proportions of fulminate-chamber diameter to ventage, to be practical for infantry arms, and applied for his patent in December, 1878; granted February 18, 1879.

These perfected proportions, as compared with the Government reloading cartridge, are by instrumental measurements as follows:

These proportions of the vital parts are shown on the drawings he filed as part of his application for the patent on which it was issued and in the exhibits produced by the War Department on call in the case 16261, of reloading cartridges of the Government.

1. The diameter of the fulminate chamber in both is .18 of an inch inside.

2. The outside diameter of the metal fulminate-carrier in both, made as the patent directs, by recessing a metallic circular plate .40 of an inch in diameter, which is the base inside diameter of the Springfield gun's case, for such diameter of fulminate chamber (.18) is .20 of an inch and the depth of cylinder body of case or cup is .10 of an inch all around,

making across the base and sides .40 of an inch, the same as the plate.

3. The circuit of the anvil face proper over the fulminate in both is .18 of an inch diameter, triangulated, equal on three measurements, one each side of the two vents and one midway between them. All three are, in both, as "wide as the fulminate-filled chamber"—.18 of an inch—in which it is tightly fitted in the cup and case, as directed by the patent.

4. The sum of the depth of the anvil in its case with the chamber, in both, is .10 of an inch inside.

5. The solid flange is fully double the thickness of the indentable center of the fulminate chamber to compress the fulminate with a striker and hold it firm and tight without expansion of the head.

6. The minimum width of the bar *i* of the anvil in the cartridges and patent, at its center, is in both .11 of an inch, curving to .18 of an inch at the sides, and with the fulminate-chamber curve forming the outer line of the two actual openings over the fulminate, each side of the bar (Figs. 1, 2, 3 of patent).

7. The ventage of both open and free is .09 of an inch, and each shows a transverse extension cut or groove from the actual opening in the metal of the anvil plate.

8. In both the fulminate explosive force, flame, or fire escapes in a "short" and "direct" course from the fulminate chamber to the powder charge.

The proportions in all vital features and the parts or elements and operation are identical in all seven points of measurement, proving conclusively the adoption of the

reloading cartridge of and from the patent 212,313 as of record in the Patent Office and available to all persons, as well as to the Government, by act of Congress especially.

A comparison with the Gill patent, No. 220,472, referred to in amended finding XII as for a "grooved anvil disk," appears by the claim to be only "as shown" in the drawings.

These drawings have no scale and are literally, "as shown" in Fig. 6, in section. The fulminate-carrier or cup is .30 of an inch in diameter outside and .26 of an inch inside, being .08 of an inch greater than either the Government reloading cartridge or than Hubbell's patent. The squares of their diameters and of fulminate stand:

Hubbell's patent,	.18 =.....	.324
Government reloading,	.18 =....	.324
Gill patent,	.26 =.....	.676

and over twice as much fulminate and too much for actual use; is too powerful and dangerous; is not used.

In Fig. 5 of the Gill patent the inside diameter is .50 of an inch, being a greater diameter than the .45 caliber of the Springfield gun. This size compares with the reloading cartridge and Hubbell's patent as follows:

Hubbell's patent,	.18 =.....	.324
Government reloading,	.18 =.....	.324
Gill patent, Fig. 5,	.50 =.....	.2500

being 7.7 times too much fulminate and entirely too powerful and dangerous and too large for fire-arms or any kind of gun.

This also proves on the face of the record that the Government cartridge was introduced by the proper officers from the Hubbell patent in July, 1879, long before there was any Gill patent, and not in accordance with the Gill patent, limited and claimed only "as shown" for a groove or slot. The groove and openings or notches in the Gill patent are

rectangular and larger, not capable of use in the Springfield gun.

In the Hubbell patent the openings through the anvil over the fulminate are curved, keeping the anvil stiff and strong. The same is in the Government cartridge, and both are in line with the sides of the fulminate chamber in the outer curve. The central space in front of the anvil is largest in the Hubbell patent, .15 of an inch instead of .10 of an inch, the latter being the same diameter as the cut made in and through the Hubbell anvil, and the same in area as the two openings over the fulminate, both in the Hubbell patent and the Government cartridge using the same amount of fulminate in the same diameter of chamber, with the same width of anvil bar in the center, to explode instantly with certainty of fire on indentation of the central metal of the fulminate chamber, showing conclusively the adoption of the proportions, functions, and combination of the Hubbell patent in the Government cartridge and secured by the claim of the Hubbell patent substantially as described therein and not contained in the Gill patent.

The Gill specification uses the following language of the Hubbell patent:

1. "It (the anvil) is designed to *fit closely* within a cap or primer of ordinary form."

Hubbell says, "*closely fitting*" inside the case.

2. Gill says, "it offers a *solid surface* upon which the fulminate may be exploded."

Hubbell says, "the central anvil affords a *firm resistance*" to ignite it (the fulminate) with certainty.

3. Gill says the groove will afford a "*free passage*" for the flame to the vent or opening in the base of the shell.

Hubbell says, "and yet have *free escapement*" for the explosive force at once from beneath the anvil plate.

4. Gill says, "and that it permits the flame to pass in a *short and direct course to the powder.*"

Hubbell says this chamber at its sides or outer extreme edges *communicates "directly and exclusively with the powder charge."*

Thus copying every functional principle in the Hubbell patent and proving that Gill invented nothing at all in the combination and organization of the system of the cartridge.

The frivolous claim of a groove in a disk is nothing new in other forms of anvil, but, like a slot in mechanics, is not patentable, as decided by the United States Supreme Court.

WM. WHEELER HUBBELL,
Appellant.

GEO. S. BOUTWELL,
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F. P. DEWEES,
Of Counsel.

IN THE
Supreme Court of the United States.

OCTOBER TERM, 1897.—No. 198.

WILLIAM WHEELER HUBBELL, APPELLANT,
vs.
THE UNITED STATES.

APPEAL FROM THE COURT OF CLAIMS.

STATEMENT FOR APPELLANT.

This is an appeal from a judgment of the Court of Claims, dismissing the petition in No. 16,336, in which case William Wheeler Hubbell is claimant.

The petition is based upon a patent for improvement in cartridges, issued from the United States Patent Office to appellant, dated February 18, ~~1897~~¹⁸⁷⁹, and numbered 212,313 (Trans., pp. 28, 29, 32).

The claim in such patent is as follows:

In the bottom of a solid metallic flange cartridge case or shell, the combination of a circular base inclosing a central chamber of fulminate and an anvil over the fulminate provided with two or more openings, whose inner edges nearly coincide with the edges of the central chamber of fulminate in the base of the cartridge, substantially as described.

Very shortly after the issuance of the patent Mr. Hubbell notified the Secretary of War and asked that the cartridge be tested and used, and that he should be allowed royalty for the same. (Trans., Finding 7. p. 19.)

Subsequently to the knowledge of Mr. Hubbell's cartridge having been brought to the attention of the War Department, the Government commenced experimenting on what is known as the "Government reloading cartridge," which experiments gradually led to its manufacture and use on a large scale, resulting in its adoption as the service cartridge to the exclusion of all others.

The experiments commenced at the Frankford Arsenal in the month of July, 1879. "Owing to the juxtaposition, construction, arrangement and combination of its parts, this cartridge is best adapted to receive with certainty of fire the blows of the striker in the Springfield gun." (Trans., p. 22, 2d par., Finding XII.)

It is the contention of the appellant, in this action, that the Government reloading cartridge is substantially and identically the device covered by his patent No. 212,313, in the "juxtaposition, construction, arrangement and combination of its parts."

The petition in the case at bar was filed on the 14th of June, 1888. It presents a claim for a just and reasonable royalty for cartridges manufactured in accordance with his patent by the Government for use for nearly six years prior to that time.

A suit had been instituted by claimant for prior manufacture of cartridges (not included in the present petition) numbered 13,793 in the Court of Claims. In that action the main contention arose upon the manufacture and use of what were known as the "cup anvil cartridge."

In that action was also included in the claim certain reloading cartridges which had then been experimentally manufactured.

No claim for the "cup anvil cartridge," nor for the reloading cartridge claimed in that suit, is at issue in the case at bar. (Trans., p. 23.)

As appears by Finding IX (Trans., p. 19), No. 13,793 is still pending in the Court of Claims on a motion to amend the findings of fact.

A motion for an appeal in that case to this Court is not yet allowed. A motion of the claimant to amend order of court heretofore entered as to evidence to be used on the trial allowed, subject to objections of defendants on the argument, was pending at the time of judgment in case at bar. (Trans., p. 8.)

On the 23d day of July, 1895, the Court of Claims entered judgment in the case at bar that the petition be dismissed, finding the facts already found in No. 13,793. (Trans., p. 13, and Findings I to VIII, inc.)

The case was tried on the merits under the general traverse.

With due respect to the Court below, it is submitted that these findings are not only manifestly erroneous but are not directly in point in the case at bar, where the adopted use of the reloading cartridge is alone at issue.

So literally were the findings in case No. 13,793 found in the case at bar, that whilst there is a finding as to the amount of cup anvil and reloading cartridge manufactured under the claim presented in No. 13,793, there was no finding whatever then found as to the amount of reloading cartridges manufactured during the period covered by the present suit.

Finding IX, if material at all, shows that No. 13,793 was still pending before the Court of Claims upon motions to amend findings. The finding is defective, in that it only purports to give the substance of the proceedings in case No. 13,793, and does not present the proceedings in such form as to enable this Court to consider them if material or to be even a transcript of docket entries. Additional facts, based on evidence not in No. 13,793 at the time of former argument, were not then found, nor were patents or exhibits of any kind found.

For error manifest upon the face of the record claimant made a motion for a new trial and amended findings of fact. Additional findings of fact were found (Trans., pp. 21 and 22, Findings X, XI, XII and XIII). The motion for a new trial was denied.

Additional facts were found under headings X, XI and XII, 14 in number, together with exhibits and models, 15 in number.

Such additional facts and exhibits were not regarded by either claimant or defendant as sufficient to present the issue, and upon motion of claimant and defendant three amendments of findings, five additional findings, and ten exhibits were found. (Trans., 21 to 24, inc.)

The additional findings, exhibits and models are 47 in number. A different issue is presented in cases No. 13,793 and No. 16,261, not only because different manufacturers are the basis of the two suits, but also because different and material facts were presented to the Court for consideration.

The facts as found are incongruous and contradictory. Where there are conflicting findings they can be reconciled by this Court upon examination of the findings as a whole and in connection with the drawings, models and other exhibits.

The Court below, it is contended on the part of the appellant, has misconstrued patents and misdescribed exhibits. If there are errors in these particulars it is submitted this Court has the power of review.

ASSIGNMENT OF ERRORS.

I.

The Court erred in Finding I.

The caveat filed by claimant, April 13, 1865, together with the drawings, should have been found instead of the substance thereof, as understood by the Court. In Finding II claimant's application for a patent, dated April 13, 1865, with the drawings and proceedings thereon, should have been found instead of statements as to the substance thereof and extracts from the same. (On page 23 the incorrectness of a quotation from application is admitted.)

In Finding III the application for a patent, dated January 23, 1872, with drawings, should have been found instead of extracts from the same.

In Finding IV Hubbell patent 212,813 should have been found instead of extracts therefrom. The finding of the substance of specifications instead of the patent itself is an error.

The want of correctness in a quotation from the patent in this finding is admitted (page 23). The patent was afterwards found on a motion for a new trial. (Trans., p. 21, Finding XI.)

II.

The Court erred in Finding V.

The error consists in the dates and in the general description of what was done at the Frankford Arsenal. The Court neglected to amend Finding V, but found facts relating to the manufacture of cartridges by the Government entirely inconsistent with such finding in Finding XI. (Trans., p. 21, commencing at 2d paragraph.) Finding V should therefore be expunged.

III.

The Court erred in Finding VI—

First.—In describing the “cup anvil cartridge.” The “cup anvil cartridge” is not at issue in this suit, and therefore any description of it, as an issue, in a finding of fact, whether correct or incorrect, is immaterial.

Second.—In a misdescription of the Government reloading cartridge as shown by the exhibit cartridge in evidence.

1st.—In describing that the cartridge is rimmed around the base, when it is in fact “a solid metallic flange cartridge case or shell.”

2d.—In stating that it has “a pocket in the exterior of the center of the base,” and “through the top of this pocket, supposing the cartridge to be stood upon its base or closed end, is pierced a single aperture or hole to carry the fulminate flame to the black powder chamber.”

As will be seen by an examination of the exhibit, there is no pocket in the exterior of the center of the base of the organized cartridge. As a part of the organized cartridge, the shell is recessed as a receptacle for the fulminate chamber with an anvil over the fulminate, with two perforations near the outside edges, by means of which the fulminate and powder come in direct contact. The shell is contracted or recessed at the bottom for the purpose of forming a support to the fulminate chamber and anvil, which, when inserted, help to form a solid fire-tight base or bottom to the cartridge.

3d.—In stating "this cartridge contains only the black powder and the bullet."

The exhibit shows this description of the cartridge to be not only erroneous, but impossible, for the reason that the cartridge and bullet can only be inserted into the cartridge case or shell *after* the fulminate chamber, the fulminate and anvil are in place. If not in place, there would be nothing to keep the powder in the cartridge—it would run through the shell. The fulminate chamber, the fulminate, the anvil over the fulminate in direct contact with the powder and the bullet in a solid metallic flange cartridge case or shell constitutes the cartridge.

4th.—In stating the base "is pierced by a single aperture or hole to carry the flame to the black powder chamber."

A space for a flame is avoided; the exhibit shows that the powder and fulminate are in direct contact.

5th.—In stating as to the operation of the cartridge, "through the holes thus formed (meaning the side openings in the anvil) the flame from the fulminate escapes; if this primer is placed in the chamber of the reloading cartridge, with the closed end of the cup outward and the grooved end against the top of the chamber, the *flame* from the fulminate when exploded would pass through these holes or notches, thence along the groove to the central aperture in the cartridge case or shell, thence to the black powder chamber through this single aperture."

An examination of exhibit will show that an exactly contrary operation is the case; the powder passes through the opening, fills the grooves and is in direct contact with the fulminate; there is no flame separate from the powder—there is direct ignition of the powder which fills the groove.

V.

The Court erred in Finding VII (Trans., 19)—

In finding as pertinent to the issue the number of cup anvil cartridges manufactured from March 1, 1879, to March 31, 1883, neither that period of time nor the "cup anvil cartridge" being embraced in the present suit; also—

In finding as pertinent to the issue the number of reloading cartridges manufactured from February, 1879, to March 31, 1883, such period of time not being embraced in the present suit, many of such reloading cartridges being experimental and tested in competition with the cup anvil cartridge.

VI.

The Court erred in Finding IX (Trans. 19)—

In finding the proceedings in No. 13,793 in substance. If material the proceedings should be so found, so as to show the actual proceedings or a transcript of docket not the substance of such proceedings.

VII.

The Court erred—

In view of additional findings of fact (Trans., 21, 22), in overruling claimant's motion for a new trial.

VIII.

The Court erred in amending Finding XII (Trans., 23)—

In stating (1) "the solid flange case, with a pocket or recess to reload, has been made and used by the United States from the year 1872."

This is indefinite, if found for the purpose of showing anticipation of claimant's device for an organized cartridge.

If for such purpose, there should be found specifically the nature of the construction, the function and result of such constructions; when, how, and under what circumstances they were made and used, and furnishing exhibits of the same.

The other findings show that from 1868 up to the time of the adoption of the reloading cartridge, and some time afterwards, the cup anvil cartridge was in use by the Government. (Trans., p. 18; Finding VI, p. 22; Finding XII.)

(2) In stating "from that year (1872) until the adoption of the grooved anvil disk, described in finding VI (for which patent No. 220,472 was granted to Jabez H. Gill, October 14, 1879), various other anvil disks were made and used by the United States in this type of cartridge shell in large quantities, which anvil disks, though differing from the first mentioned type in some respects as well as from each other, secured adequate ventage to the aperture above the anvil by means of notches or openings through or at the outer portion of said disks "

This statement of facts is indefinite. If there should exist constructions such as are described they should be brought to the attention of this Court in such manner as to be considered in any bearing they may have upon the case. Anticipation cannot be assumed from vague and indefinite statements.

It also, by implication, assumes that a grooved anvil disk, patented to Jabez H. Gill, is in use in the Government reloading cartridge, which is in opposition to the Gill patent and exhibit of cartridge also found by the Court as exhibits and facts in the case.

IX.

The Court erred—

In dismissing claimant's petition.

ARGUMENT.

THE ASSIGNMENTS OF ERROR GENERALLY.

The findings of fact are incongruous, contradictory, and in construction of patents, exhibits and models inaccurate.

At the time of rendering judgment in the case at bar the facts found are literally the facts found in another case, which is still pending in the Court of Claims on a motion for an appeal to this Court, not yet allowed, and upon motions for amended findings of fact.

To such findings neither patents, drawings, models, nor other exhibits were attached.

The findings as then found were in fact so literally applicable to another case that the Court not only omitted to find as a fact the manufacture and use of the cartridges upon which the present suit is founded, but did find other cartridges not now at issue. No claim is made for the manufacture of the "cup anvil cartridge" in the present suit.

The Court substituted for the entire applications for patents, drawings, exhibits and models their own construction and description of the same, notwithstanding the construction of patents, exhibits and models are subjects of review by this Court.

The Court, in findings made at the time of judgment, found erroneous facts, which were afterwards corrected in subsequent findings on motion for new trial as "additional findings of fact." Special reference is made to Finding V, in which the time of the manufacture of metallic cartridges and the end of the use of rim-fire cartridges is fixed in 1864, the fact being (as appears in a subsequent finding) that the order for the manufacture of metallic cartridges at the Frankford Arsenal was made in the fall of 1866.

The principal bearing of this mistake in the original Finding V is that such manufacture is wrongfully placed before instead of after the application of Mr. Hubbell for a patent in 1865. This mistake places the manufacture of certain

cartridges for experimental purposes in 1864 which were actually made after the fall of 1866. (See Finding XI, paras. 3, 4, and 5, Trans., 21.)

Finding V is also wrong in referring to cartridges as in use which were made for experimental purposes prior to 1868, when the cup anvil cartridge was adopted. (See Finding XI, paras. 6 and 7, Trans., 21.)

Whether the description of the cup anvil cartridge in Finding VI is correct or not is immaterial. It is not admitted. It is surplusage; the cup anvil cartridge is not at issue in this suit. (See finding at plaintiff's request. Trans., 23, par. 6.)

The Court below misdescribed the Government reloading cartridge in Finding VI.

The reloading cartridge is asserted to contain only the shell, the bullet and powder.

Whilst insisting that a cartridge is only a cartridge when it is organized or complete in its parts, according to the original design, it may be admitted that certain forms of what are designated as cartridges do consist of shell, powder and bullet. These are generally paper cartridges manufactured in the incipency of the art.

But in the reloading cartridge there can be no such construction as shell, powder and ball as a complete cartridge, as can readily be determined by the following simple method:

Stand the Government shell unorganized flange end downward on a piece of paper; pour cartridge powder into the forward part or the mouth of the shell.

The result of this experiment will be found to be that powder will run through the aperture in the lower part of the shell, falling upon the paper.

It will therefore be seen that in the Government construction there can be no cartridges consisting only of case, powder and bullet. In organizing the cartridge, what is miscalled the "primer," must be first placed in position in the shell, followed by the powder and bullet. It is only when so organized

that the cartridges are issued. The reloading for many reasons is difficult and requires great care. (See Ex., directions for reloading.) Even these directions have been found not sufficient, and for some time past have been withdrawn with directions to send the discharged shells to the Frankford Arsenal.

To describe "a solid metallic flange cartridge case" as "rimmed around the base," is not accurate, and considered independently of the exhibit in the case might possibly be misleading. It is what is called in Mr. Hubbell's claim "a solid metallic flange cartridge case or shell." (See Patent, Trans., p. 30.)

The finding describes "a pocket exterior to the center of the base." "Through the center of this pocket, supposing the cartridge to be stood upon its base or closed end, is pierced a single aperture or hole to carry the fulminate flame to the black powder chamber."

The exhibit shows a solid flange cartridge case, the bottom part of which is recessed for the purpose of holding a fulminate chamber in place. It was a well-known construction at the time patent 212,313 was issued and well known when the Government reloading cartridge was first made, that being of later date. The top of such recess is intended in the reloading cartridge as a support for the fulminate carrier and anvil, leaving a passage of the powder to the fulminate. The aperture in the case is not intended for a passage for "fulminate flame;" the powder passes from above to the fulminate and is ignited directly by the fulminate before it reaches the aperture.

The anvil piece is described in the findings as follows:

"Above this (the fulminate) is fastened a disk or cover having a groove on the upper side, being the diameter of the circle; at each end of this groove a small piece or notch is cut out of it; *through the holes thus formed the flame from the fulminate escapes; * * * the flame from the fulminate when exploded would pass through these holes or notches, thence along the groove to the central aperture in the cartridge case or shell, thence to the black powder chamber through this single aperture.*"

An examination of the anvil piece by this Court will show a manifest error in the description as to the purpose of the groove.

As may be seen by the simple experiment before suggested, the powder has a passage through the aperture to the groove.

Further experiment is now suggested:

Place the anvil piece on a piece of paper, with groove upward; pour upon it cartridge powder, and the groove will be found sufficiently large to hold powder.

It follows, therefore, that there is direct and exclusive communication of the power with the fulminate, there being no air-chamber below or above it; that there is instant ignition of the powder in the groove; and that the groove constitutes the bottom of the powder chamber.

THE ISSUE IN PRESENT CASE LIMITED TO THE RELOADING CARTRIDGE.

In case No. 13,793 the "cup anvil cartridge" was the main issue. During the period covered by the petition in that case the reloading cartridge was used experimentally before its adoption, which was gradual. (See Trans., 19, Finding VII, as to number of each kind of cartridge manufactured and used during that period.) Mr. Hubbell is an old inventor, a student as far back as 1842 of the subject of breech-loading fire arms and explosives. He believed that he was the inventor of a number of the parts that helped to make up the organization of the "cup anvil cartridge." As is sometimes the case with inventors, he construed his patent, which was for a combination, to cover the component parts which he believed to be original with him. Parts of the "cup anvil cartridge," which he claims to have invented, he believed were covered by his patent—hence the claim made in 13,793.

Not disclaiming any right to original inventions, in the present action his claim is based solely upon the combination in the reloading cartridge covered by patent No. 212,313.

THE GOVERNMENT RELOADING CARTRIDGE IS IDENTICAL WITH THE CLAIM ALLOWED MR. HUBBELL—NO. 212,313.

Examining the organized Government reloading cartridge in connection with claim allowed Mr. Hubbell, is found—

1. A solid metallic flange cartridge case.
2. This is in both the Government cartridge and the patent. In the bottom of the cartridge case the combination of (1) a circular base (2) inclosing a central chamber of fulminate (3) and an anvil over the fulminate provided at the sides and opposite each other with two small openings.

The claim in the patent exactly corresponds with exhibit.

In the bottom of a solid metallic flange-cartridge case or shell the combination of (1) a circular base (2) inclosing a central chamber of fulminate, and (3) an anvil over the fulminate, "provided with two or more openings, whose edges nearly coincide with the edges of the central chamber of fulminate."

The construction of the Government cartridge, therefore, appears to be covered by the claim allowed Mr. Hubbell.

THE DISTINGUISHING FEATURES IN MR. HUBBELL'S INVENTION ARE ALSO THE DISTINGUISHING FEATURES IN THE GOVERNMENT RELOADING CARTRIDGE.

Comparing Government cartridge with the specification of distinguishing features in Mr. Hubbell's patent from other inventions. (Trans. 29, 2d Column, 1st page.)

Patent: "The fulminate, although the superior explosive force is contracted into a diminished or small central chamber and fills it."

Exhibit: In the cartridge the fulminate chamber is in the recessed plate or cap immediately below the anvil piece and bar. The chamber is filled with fulminate. There is no chamber or space below the fulminate into which the explosive force may expand.

Patent: The flange and head of the metallic case are solid—all in one piece.

Exhibit: An examination of the Government cartridge will show a flange and head that are solid. It is exactly the same construction provided in the patent, where paper, as will hereafter be fully shown, is dispensed with. The base is fire-tight, of one piece with the flange, made so by directions in "Ordnance Office official orders to load the reloading cartridge." (Exh., Find. XIII, Trans. 22.) Unlike the folded flange, a solid flange offers no room for expansion and consequent bursting at that point. It required no reinforcement cup.

Patent: This chamber, at its sides or outer extreme edges, communicates directly and exclusively with the powder charge, so that the explosive force of the fulminate is not allowed to expand under a larger area of the anvil plate and blow it out, but is compelled to diffuse its explosive force, not in a central stream, but in a diffused body into the base of the powder charge.

Exhibit: The above is the exact description of the Government cartridge. As has been before demonstrated by experiment, the powder is in direct contact with the fulminate at the apertures, notches or perforations of the anvil at the sides of the fulminate chamber. It is distinguished from the Howe and Smith and Wesson by having no air chambers below the anvil into which it may expand. There is no central opening in the anvil. There is no escape for the exploded fulminate except at the vents. It is compelled to diffuse its explosive force into the base of the powder charge at each vent.

The *patent* continues:

To effect this the central "anvil-piece" has no central aperture, is as wide as the fulminate-filled chamber, and the perforations are at the extreme outer sides of this fulminate.

Exhibit: The construction of the "anvil-piece" in Government cartridge is precisely the same. The anvil-piece has "no central aperture." It "is as wide as the fulminate-filled chamber." "The perforations are at the extreme outer sides of the fulminate."

The similar construction is for the same purpose in both cartridges.

This construction is for two purposes.

Patent: One is to diffuse the fire from this center most thoroughly. The other is to have an unperforated anvil over and against the fulminate, as it rests solid in its chamber to receive the central blow of a striker and obtain complete resistance by the anvil bar, and yet have free escapement for the explosive force at once from beneath the anvil-plate without any chamber or space for it to expand into under the plate.

Exhibit. In the Government cartridge the anvil-piece rests solid in its chamber, the anvil bar is sufficiently wide to receive with certainty the varying blows of the striker in the Springfield gun, the vents, notches or openings in the anvil-piece are for free escapement, there are, as has been shown by experiment, no chamber or air space under the anvil for the fulminate flame to expand.

The result the same.

Patent. This assures a certain ignition, security of the anvil-plate to keep its position, and a complete combustion of the powder charge, from the base forward, as it impels the bullet out of the gun.

Exhibit: Owing to the juxtaposition, construction, arrangement and combination of its parts, this cartridge (the Government reloading) was best adapted to receive with certainty of fire the blows of the striker of the Springfield gun. (Trans. 22, Find. XI, 2d par.)

**THE GOVERNMENT RELOADING CARTRIDGE IS
AN IDENTICAL CONSTRUCTION DESCRIBED IN
THE SPECIFICATIONS OF THE PATENT—212,313.**

Hubbell's patent, 212,313 in the specifications, refers to two different fulminate chambers, to both of which the distinguishing characteristics of his invention apply.

One chamber is obtained by the perforation through the center of a circular disk of paper or other suitable substance. This construction is specifically shown in the drawings. Another form of the fulminate chamber is described in the specifications as follows:

The fulminate chamber, *C*, may be recessed or formed in the metal of the circular plate, *E*, with central bar, *I*, and two side perforations, *KK*, over it, dispensing with the paper.

This is exactly the Government construction—a recessed plate or what is sometimes called a cap. It is made by punching the plate. The fulminate is contained in the bottom of the cap. “*Over it*” is the anvil bar with side perforations.

The specifications in the patent are specific as to the method of holding the combination in this form in place; in both cases the metal is contracted or pinched over the anvil. The test of the sufficiency of specifications for the purpose of construction is as to whether a good mechanic or a mechanic skilled in the art could, without invention, make the construction. *Ives vs. Hamilton*, 92 U. S., 426; *Hogg vs. Emerson*, 6 How., 437; 11 How., 587.

A specification in a patent is sufficiently clear and descriptive when expressed in forms intelligible to a person skilled in the art to which it relates. *Sebury vs. Am. End.*, 152 U. S., 561.

The specification of a patent is to be construed in the light of that knowledge which existed in the art at the time of its date. *Lawther vs. Hamilton*, 124 U. S., 1; *Burt vs. Ivory*, 133 U. S., 349.

A specification is to be addressed to those skilled in the art to which the patent relates, and is to be comprehensible by by them. It may be sufficient, though the unskilled may not be able to gather from it how to use the invention. *Mowry vs. Whitney*, 14 Wall., 620.

Applying the above tests to claimant's device and the Government cartridge, it is sufficient to state that Mr. Jabez H. Gill, a mechanic skilled in the art, did construct the Government reloading cartridge, without invention, after Mr. Hubbell's patent was presented to the consideration of the United States Government. On the 22d day of March, 1879, claimant notified the Secretary of War of patent 212, 313 issued, February 18th of the same year. (Finding VII, Trans. 19.) Experiment with the reloading cartridge commenced in July, 1879.

The finding of the Court, that the cup anvil cartridge was abandoned in July, 1879 (Finding XII, Trans. 22), must be considered in connection with Finding VIII, (Trans. 19), where it is stated that from March 1, 1879, to March 31, 1883, the United States manufactured 14,714,082 cup anvil cartridges, and after February 18, 1879, used 2,700,000 theretofore made; in all 17,414,082.

During the same period there was manufactured 3,866,352 reloading cartridges and 9,373,700 primers. From these figures, found by the Court, the meaning of the two findings taken together appears to be that whilst the manufacture and use of the cup anvil cartridge continued, the experimental use of the reloading cartridge commenced in July, 1879.

Jabez H. Gill has been at the Frankford Arsenal for many years, as far back as 1864. His duties were those of a machinist or skilled mechanic. (See *Gill vs. U. S.*, 25 C. Cls., 416.) He prepared the drawings in Ordnance Mem. No. 14. (See letter of transmittal of Maj. T. J. Treadwell, Ch. of Ordnance.)

From the character of his duties the Hubbell device was presented to him. He was familiar with the various cartridges experimented upon and used by the Government. The Patent Office shows he is the patentee in a number of inventions relating to the manufacture of cartridges.

There is no groove in the top of the Government reloading cartridge for the passage of the *flame* of the fulminate to the powder. As has been demonstrated, both the vent and groove in the top of the anvil piece are sufficiently large to pass powder and hold it in the groove, thereby constituting it the bottom of the powder chamber, where the fulminate is in direct and exclusive communication with the powder charge.

Mr. Hubbell illustrated in specifications and drawings the holding of the anvil piece in place where paper was used as a fulminate keeper, by contracting, pinching or indenting the shell directly over the anvil plate. But that method was no part of his invention and was not claimed as such. Any other known method of holding the plate in place would un-

doubtedly be covered by his claim. It would be an equivalent. So with the recessed plate containing fulminate and anvil; he was entitled to the benefit of any known invention for keeping the combination in place, the only limitation being that it should be in a solid metallic flange case.

A groove at the top of the anvil piece might be dispensed with without in any way affecting the operation of the cartridge. If, as is the case, in the Government cartridge there is direct contact of the fulminate with the powder charge, and cartridge shell is only recessed to keep the combination solidly in place, the opening aperture in the cartridge shell could be made much larger without in any way injuriously affecting the operation of the combination.

If the vents in the construction were closed from the powder no invention would be required to open a passage way through the top of an anvil plate.

It can readily be seen that the aperture in the shell is reduced to a smaller size than is necessary to give the shell sufficient strength to hold the combination in place; the passage way is not for flame, and no good results follows; such is shown in numerous instances in gas check devices in front face of a block anvil in Ord. Mem. 14.

Even if the groove above the anvil piece did not hold gunpowder, and the flame did first meet the powder at the aperture, Mr. Hubbell's invention would apply to the Government cartridge.

As has been illustrated, the powder charge in the Government cartridge is in actual communication with the fulminate. But his invention does not depend upon the actual touch of the powder and fulminate.

Part of his combination was a solid flange cartridge shell—this for strength—as offering no place for expansion at or near the flange and consequent bursting of the shell; no necessity for a reinforce, as in a hollow flange, and preventing transverse spreading in firing and stripping in extraction. The other elements of the combination were placed in such

juxtaposition in the shell as to leave no space for air chambers below the anvil. Such juxtaposition of the parts in and in connection with the solid flange shell was to make such a system of tight jointure in assembling as could be maintained and increased at the time of the explosion of the gunpowder. The purpose of the anvil piece is not only to receive the blow of the striker upon the anvil bar, but is also important, by reason of its position and relation to other parts of the combination, to maintain its relative position. It is a retaining disk, as well as an anvil, so specified in the patent. At the time of the explosion of the powder charge the pressure upon it is backward, rendering, in the absence of air chambers below the anvil, the bursting of the cartridge shell at the base next to impossible. The words in the patent therefore that the fulminate "chamber at its outer or extreme edges communicates directly and exclusively with the powder charge" is for the purpose as stated, viz: "That the explosive force of the fulminate is not allowed to expand *under* a larger area of the anvil plate and blow it out."

One difficulty that inventors of cartridges had failed to overcome was in the expansion of the fulminate below the anvil, and it was this difficulty among others claimant in his patent sought to overcome. He did it in a system which was the full development of a necessity in the construction of cartridges, which the record shows he had conceived many years before and which had its perfected result in the present patent. If the effect of his construction was to communicate the whole of the fulminate fire exclusively to the powder charge, it is immaterial that *above* the anvil should be a very small channel to the powder. The ignition is instantaneous, the powder in explosion operating upon the expulsion of the bullet, and not backward in such way that the shell might be bursted and the effect of the combination be lost.

CONDITIONS EXISTING WHEN THE MANUFACTURE OF GOVERNMENT RELOADING CARTRIDGE WAS COMMENCED.

For the purpose of showing the circumstances under which the Government reloading cartridge was first manufactured, a brief review of pre-existing conditions as shown by the findings of fact, public reports and records, and current history, of which the Court may take judicial cognizance, is made.

At the close of the war, in 1865, a limited experience in the use of breech-loading fire-arms had established in the minds of ordnance officers their value. Breech-loading fire-arms had been long known; they were in use immediately after the discovery of gunpowder, but difficulties incident to their use led to their abandonment. During the present century invention has been turned in the direction of their use, but only in the Franco-German war were breech-loaders adopted to any very great extent, and then most successfully with paper cartridges. Prior successful use had been with sporting guns where only light charges of ammunition were required.

At the close of the civil war in the United States there were a very large number of muzzle-loaders in the possession of the Government, which, from motives of economy, it was deemed desirable to change to breech-loaders.

The most practical way to make this change and the form finally adopted (see exhibit, Springfield gun) was to cut away a portion of the upper face of the barrel at its lower end, near the stock, and insert therein a breech-block opening upwards and forward. This construction required, to be effective, a center fire cartridge (in place of a rim-fire where the fulminate was in the flange) to be struck at an angle by the firing pin or striker.

Although some unsuccessful experiments had been made by the United States with Morse, Burnside, and Maynard cartridges (Ordnance Mem. No. 14, Plates 1, 2, 3), rim-fire cartridges were generally used up to the fall of 1866,

when the order was first given at the Frankford Arsenal for the manufacture of center-fire cartridges.

After a number of experiments at Springfield, Mass., and practical tests in service, the breech-loading gun substantially as now used was, by act of Congress, in 1872 adopted.

The great difficulty was to obtain a cartridge best adapted to the new gun. Prior to the fall of 1866, when experiments and manufacture commenced at Frankford Arsenal, a very large number of cartridges had been invented and used both in this country and abroad. But none of these were regarded as satisfactory. Whilst a great number of cartridges had been invented prior to 1866, the use of metallic shell cartridges in breech-loading guns was not general. The drawing of metals was a recent invention and not then generally adopted. Cast bases for shells had not been abandoned in 1872 (see Ordnance Mem. 14, Plate LII).

A large number of experiments with cartridges were made at Frankford Arsenal after 1866, none of which were fully successful. The most of the experiments were with folded head cartridges with gas check devices. The "cup anvil cartridge" adopted in 1868 was not satisfactory; subsequent experiments after 1868 to reinforce the hollow flange were made without success. (Trans., p. 22, Finding XI, par. VII.)

In this condition of cartridge use by the Government Mr. Hubbell's cartridge was presented in March, 1879.

APPELLANT AN ORIGINAL INVENTOR—THE ORIGINATOR OF A SYSTEM.

Mr. Hubbell, the appellant, is an old man, an old inventor who has devoted many years to the study of breech-loading fire-arms, explosive and cartridges. This fact is attested by many inventions issued to him from the Patent Office, and by reports of Congressional Committees. It is shown in reports of the Court of Claims (Hubbell, 5 C. Cls., 1; Hubbell, 20 Id., 365).

Patent No. 212,313 illustrates a perfected system of a metallic cartridge based upon an original system suggested in his *caveat* and application for a patent for a cartridge filed in 1865, followed by applications in 1872 and 1878. (Trans., pp. 13 to 16; Find. I to IV.)

In Finding I it is declared the caveat was prepared in 1842. The finding, imperfect as it is, discloses at that early date a center-fire cartridge, an enclosed fulminate chamber in the center of the base, the cartridge to be fired by a drill, the powder over the fulminate chamber.

In application of 1865 (Finding II) a center-fire instead of a rim-fire cartridge is claimed. Cartridges with solid flanges were in the then state of the art not being made, the folded cartridge flange was in use. Mr. Hubbell understood the necessity of a solid flange and under the then state of the art proposed to make it mechanically solid. He used a small amount of fulminate in a chamber with free escapement through vents in an anvil placed over it. He understood the relatively great power of fulminate and quickness of its ignition over that of gunpowder. The anvil was placed solidly in position, having sufficient surface and strength to receive the blow of an oblique striker, and at the same time to allow free escapement of the fulminate fire. In the construction the fulminate and powder were in direct contact. The cartridge was intended to be fire-tight.

Whilst the Government up to 1879 was making the effort to use successfully a hollow folded-head cartridge without success in reinforcing it, Mr. Hubbell was perfecting a combination of a solid flange-cartridge shell, when organized, fire-tight; a diminished or relatively small fulminate chamber, with a strong anvil over the fulminate to receive the blow of the striker, with perforations sufficiently large to allow the exploded fulminate exclusively and directly to ignite the powder without any air chamber under the anvil requiring gas checks. He aimed in his cartridge to meet the requirements necessary to successfully use the Springfield gun and to obviate the difficulties encountered in other inventions.

THE RESULT.

Directly after Mr. Hubbell, in 1879, presented his patent No. 212,313 to the War Department, the former line of experiments at the Frankford Arsenal were abandoned and the reloading cartridge was after thorough tests gradually adopted.

IT IS NOT NECESSARY THAT TWO MACHINES SHOULD BE SIMILAR IN FORM TO BE IDENTICAL.

Whilst it is claimed, in behalf of appellant, that the Government reloading cartridge is identically a device which a mechanic skilled in the art might construct from the specification in patent No. 212,313, it is not necessary in a primary patent that similarity of form should be observed.

In *Winons vs. Denmond*, 14 How., 330, the Court say:

Where a patentee has described his invention and shown its principles, and claims it in a form which perfectly embodies it, in contemplation of law he is deemed to claim every form in which his invention may be copied.

And see *Root vs. Ball*, 4 McLean, 177; *Alden vs. Derwey*, 1 Story, 366; *Parker vs. Haworth*, 1 McLean, 370; *Howe vs. Abbott*, 2 Story, 190; *Sewell vs. Jones*, 91 U. S., 171; *Cantred vs. Wallack*, 117 U. S., 689; *Evans vs. Eaton*, 1 Wheat., 356; *LeRoy vs. Tatham*, 14 How., 156; *O'Reilly vs. Moore*, 15 How., 62; *Corning vs. Troy Factory*, 15 How., 451; *Burr vs. Dwyer*, 1 Wall., 567; *Jacobs vs. Baker*, 7 Wall., 295; *Whitley vs. Swayne*, 7 Wall., 685; *Agwan Co. vs. Jordan*, 7 Wall 583; *Norton vs. Jensen*, 1 C. C. App., 452; *Curtis on Patents*, par. 220, 221.

The authorities on the above point are numerous. Any seeming variation of the rule only arises where the *form* of the device is the essence of the patent. *Warner vs. King*, *Supra*.

A patentable invention is a mental result. The intellectual element is recognized as the test of identity, for anticipation

and infringement. *Smith vs. Nichols*, 88 U. S., 118; *Bischoff vs. Wetherell*, 9 Wall., 812; *Clough vs. Barker*, 106 U. S., 166; *Miller vs. Force*, 116 U. S., 157.

Judge Nelson, in *Blanchard vs. Beers*, 2 Blatch., 116, said:

The same test, and one that a jury should be guided by in all cases of this kind, is whether or not defendant's machine, whatever may be its form or mechanical construction, has incorporated within it the principle, or the combination, or the novel ideas which constitute the improvement to be found in plaintiff's machine. If it does, no matter what may be its mechanical construction or form, it is an infringement, an appropriation of the ideas of another, simply in a different form.

Upon this point see *Tatham vs. Le Roy*, 2 Blatch., 486.

ANTICIPATION.

An effort has been made to show anticipation. It is to be assumed that amongst the larger number of American and foreign patents those sent as exhibits in this case, cover that ground of defense.

AMERICAN PATENTS.

Moffitt, 53,169.

This cartridge contains no single element of the Hubbell combination. The case may be either with or without a flange. The flange shown in drawings is hollow. The case is primed with a fulminate material in its center, and its periphery around, and is with a wad consumable when the cartridge is fired.

Tibballs, 87,125.

The purpose of this patent is to show how an anvil, slightly wider than the diameter of the cartridge shell at the mouth, may be inserted from the mouth of the cartridge so that when forced into the bottom it will expand into an open flange. It does not describe a fulminate carrier separate from the anvil and the case, or describe how the fulminate is to be inserted. It has but one small vent in the anvil plate. It does not contain the Hubbell combination. As to the method of rendering the flange of the cartridge solid by the insertion of the disk, it is anticipated by the Hubbell application of 1865.

Tibballs, 90,607.

The purpose of this patent is to insert a cup within a hollow-flange metallic case in such manner as to cover and protect the flange.

There is no separate anvil; the anvil is the cup; the fulminate is not described, except that from the description of construction it must be outside and below the cup. It does not show any fulminate chamber, nor any separate fulminate carrier, separate from the anvil and enclosed in a circular base.

It does not contain the Hubbell combination. The purpose of the invention is not the same, the elements are not the same, nor have they the same functions, nor is the result attained the same.

R. J. Gatling, No. 78,953.

This is a cup anvil; the anvil part is a teat projecting backward; the shell is hollow flange, a percussion cap lies between the shell and the teat. It bears no resemblance either in principle or construction to the combination found in the Hubbell or the Government cartridge.

J. R. Van Vechten, No. 87,735.

This is a cup in a hollow flange case; funnell shaped, small perforation at the center; fulminate covered with paper and shellac. The claim is for covering fulminate with shellac and paper. Bears no resemblance to the patent or Government reloading.

B. S. Roberts, No. 86,297.

A hollow flange cartridge shell, holding a star-shaped anvil in the flange. No principle of free escapement ventage, no tight jointure. Does not contain either the principle, construction or combination of patent or Government reloading cartridge.

ENGLISH.

J. Miller, 2906, sealed, May 11, 1866.

Has no fulminate of mercury or detonating powder. No fulminate at all. It is an open large chamber between chlorate of potash on one side and amorphous phosphorous on the other. Has no resemblance to Hubbell combination.

J. M. Milbank.

This has no anvil bar, no solid flange, no overlap, no separate carrier; is not the Hubbell or Government combination.

E. T. Hughes, 1184.

This specification is for combining different layers of different powders to make an accelerating cartridge with different degrees and times of combustion. There is no description of any priming or igniting devices, nor any ground plan. There is no description of a free escapement ventage or instantaneous explosive principle.

J. H. Johnson, No. 1530.

This has a teat anvil formed in the metal of the case and a cup gas check to protect a hollow flange. Has no separate fulminate carrier with separate anvil to mechanically create a tight jointure and form a separate igniting device. Has no free escapement principle. It does not resemble in any way the patent or Government cartridge.

As will be seen there is nothing in the above patents cited by defendants in any way anticipatory of Mr. Hubbell's patent.

Ordinance Mem. No. 14 contains drawings of a number of experiments made by the Government in a search for a perfect cartridge. They were mainly for the purpose of remedying the faults of the "cup anvil cartridge." Mr. Hubbell's patent, as has been before stated, was the perfection of a system. It is a complete invention.

Reference is made to plates 1, 2, and 3, Ordinance Mem. 14, for the purpose of showing that neither the Morse, Burnside, nor Maynard cartridges bear any resemblance whatever to the reloading cartridge.

It will be observed by reference to Ord. Mem. 14 that the experiment shown in plates preceding LII are confined to folded flange cartridges, and to a great extent in an effort to remedy the defects in the "cup anvil cartridge." The remainder of the plates consist in experiments with solid heads

to the cartridge and some with the solid metallic flange cartridge case. It will be observed that none of them are on the line of Mr. Hubbell's invention of a combination inserted in a solid flange metallic cartridge case, fire-tight, with parts in such juxtaposition and combination as to satisfactorily meet the requirements of the Springfield gun.

If the thing alleged to have been in anticipation of a patent rested in speculation or experiment, and has not reached consummation, it cannot avail to defeat a patent that was founded upon discovery or invention that was completed. *Washburn, etc., Man. Co. vs. Beaten Wire Fence Co.*, 143 U. S., 276.

The finding in defendant's request (Trans., p. 23) is of too vague and indefinite a character to be discussed. That a solid flange cartridge case was original with Mr. Hubbell is not claimed. It is, however, used in prior application and patents in combination. Whatever other anvil disks may have been invented does not appear. That they differed from the Government disk and from each other is found.

It is found (Trans. 22, Find. XI.)

After 1868 numerous experiments were made to reinforce the hollow flange to prevent it from bursting, some with single disks, some with reinforce cups and some with the cup-anvil.

It was found that the cup-anvil, as used in the service, was only an anvil having no value as a reinforce.

(Finding XII, Trans. 22. See amendment, p. 23.) The cup-anvil cartridge was adopted by the Government in 1868, and has since been manufactured and used by it until July, 1879.

Owing to the juxtaposition, construction, arrangement and combination of its parts this cartridge (the reloading) was best adapted to receive with certainty of fire the blows of the striker in the Springfield gun.

Mr. Hubbell's Patent is for a Combination.

A defense that the patentee was not the first or original inventor cannot be sustained by proving that a part of the entire invention is found in one prior patent, printed

publication or machine and another part in another. *Parks vs. Booth*, 102 U. S., 96; *Bater vs. Cox*, 98 U. S., 31; *Imhaeuser vs. Buerk*, 101 U. S., 647.

IMPLIED CONTRACT.

Under the decision in the *McKeever* case, 14 C. Cls., p. 396, affirmed by this Court and by a number of subsequent decisions, there can be no question of the right of claimant to recover under an implied contract. This patent was presented to the Government with a request that it might be used. The usage of the Ordnance Office of the War Department to compel a patentee to submit the validity of his patent to the Courts before payment of royalty is well recognized. In doing so, there is no purpose of disputing its validity. Irrespective of invention, it is the purpose of the Government in its constructions to adopt the best. In taking this course the decision as to any question of infringement is shifted by the War Department to the Courts. Since the decision in *James vs. Campbell*, 104 U. S., 356, this Court and the Court of Claims has held that the patentee may waive the tort and sue upon an implied contract.

THE JUDGMENT.

The Court below has fixed as a fair royalty \$1.50 per thousand cartridges. This covers the amount of royalty claimed. The number claimed in the present suit is 105,065,990 found in claimant's request for findings allowed by the Court (Trans. 23) as follows:

From 31st March, 1883, to 31st May, 1888, the United States manufactured 39,224,315 reloading cartridges and 65,841,675 primers.

What are termed "primers" are claimant's combination, ready for distribution and distributed to be inserted in the solid metallic flange cartridge case by a mechanical process.

Such insertion is made after the distribution of the cartridges. (See Exhibit, Finding XIII, Ordnance Official Order to load the reloading cartridge.)

The distribution of the so-called primers by the Government for use in the solid flange cartridge case is as to each primer manufactured for such use the adoption and use of his invention.

The cost of making the cartridge is no necessary element in fixing the amount of royalty. It may be too much or too little; dependent on many other circumstances. The royalty as fixed by the Court at \$1.50 per thousand is not questioned in this case, and is not a subject of review by this Court.

The Court is respectfully requested to reverse the decision of the Court below in dismissing petition and direct judgment in the sum of \$157,508.98.

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